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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/030,106	05/23/2002	Martin Merck	MERC3001/JEK	8205

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EXAMINER	
FIEGLE, RYAN PAUL	
ART UNIT	**PAPER NUMBER**
2183	

DATE MAILED: 02/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/030,106	MERCK, MARTIN	
	Examiner	Art Unit	
	Ryan P. Fiegle	2183	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 December 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *12-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *12-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 May 2002* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *5/23/02*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: STACK OF VARIABLE LENGTH OPERANDS AND METHOD FOR USE.

Drawings

2. Figure 5 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

3. It is unclear what the applicant meant to convey in claim 14. The rejection made below is made to the examiner's best ability to ascertain what the applicant meant.

4. Claim 17 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is

required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Response to Amendment

5. The examiner acknowledges the cancellation of claims 1-11. Only claims 12-22 have been examined.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 12-22 rejected under 35 U.S.C. 103(a) as being unpatentable over Morris (US Patent 3,873,976) in view of Shibasaki et al. (US Patent 4,334,269).

8. As per claim 12:

Morris teaches a storage means (Morris: Figure 1, item 118) for a calculating machine containing a processing unit processing individual operands according to a program (Morris: column 2, lines 48-53), and

the storage means in which operands of different lengths are stored (Morris: column 1, lines 42-48), characterized by a type memory filled with a type indicator of constant length which stores for each operand stored in the storage means its type

information which contains information about the length of the relevant operand (Morris: column 6, lines 38-41),

the length of the particular operand type being stored in a table in dependence on the corresponding type code (Morris: column 6, lines 38-41) (Since the content of the length register corresponds to the storage capacity, it is inherent that the length of the particular operand type being stored in the length register is in dependence on the type code, which also happens to be the value kept in the length register).

Morris does not teach his storage means being a stack. In fact, Morris does not disclose any temporary storage short of the data register (Morris: Figure 1, item 118). One of ordinary skill in the pertinent art would have recognized that this is not sufficient for normal program computing since most operations contain at least two operands. Though an accumulator could possibly be used, it is not optimum since it requires many memory accesses. If Morris were to be used in modern designs at the time of the applicant's invention, it should not be bogged down by constant memory accesses since memory accesses inhibit modern processors.

Shibasaki discloses that a stack processor has the advantage of not having to save and store data on a context switch because new values created in the new context are just pushed on top of the old ones (Shibasaki: column 1, lines 39-44). In addition, stack-based compilers are usually simpler than register-based compilers (Shibasaki: column 1, lines 44-51).

Therefore, one of ordinary skill in the pertinent art at the time of the applicant's invention would have recognized that utilizing an operand stack as temporary storage in

Morris would provide the benefit of completing instructions with two or more operands, avoiding constant memory accesses, not having to backup temporary storage during a context switch and providing a simpler compiler.

In addition, Shibasaki provides the added benefit of combining a stack-based processor and a register-based processor to increase throughput and simplify the instruction set (Shibasaki: column 3, lines 67-68; column 4, lines 1-6). However, it should be noted that Shibasaki's design would not be mandatory since stack-based processors are well and known in the art (see King) and the benefits listed in Shibasaki would remain true for all stack-based processors.

9. As per claim 13:

An operand stack according to claim 12, characterized in that the type memory is formed as a stack with constant length stack elements separate from the operand memory (Morris: Figure 1, items 118 and 124) (From the figure it can be seen that they are separate).

It would have been obvious to one of ordinary skill in the pertinent art that the length register would also have to be applied as a stack since it must keep a 1-to-1 relationship with the operand stack.

10. As per claim 14:

An operand stack according to claim 12, characterized in that the type memory is integrated operand by operand into the operand memory (Morris: column 8, lines 1-5).

Morris does not disclose where the length is taken from to load into the length register, which when combined with Shibasaki would become the length stack.

However, one of ordinary skill in the pertinent art would have recognized that it would make the most sense to integrate it in with the operands. Separating the operands and the length fields would mean a very complex data fetching scheme as well as limiting the potential data space. Taking an example for communication theory, the length of each packet is contained in the header of a packet rather than at the end of a total transmission or a totally separate transmission on another port. Such is done for coherency and error correction. The same concepts would remain true when applied to Morris' scheme.

11. As per claim 15:

An operand stack according to claim 12, characterized in that the operand stack is formed as a virtual stack for a virtual calculating machine.

Virtual stacks are very well known in the art. King, as aforementioned, keeps the majority of his stack as a virtual stack in memory. Virtual call stacks for routine calls are very well known in the art. Further, virtual operand stacks in Java virtual machines are very well known in the art. Therefore, it would have been obvious to apply the operand stack as a virtual stack in a virtual calculating machine (Official Notice).

12. As per claim 16:

An operand stack according to claim 12, characterized by an operand type-checking device which is activated at each read access to the operand memory.

Error checking for length is well known in the art. Mechanisms such as parity and counting the number of received bytes by a length field received in a header are

well established. Such would have been obvious to apply to Morris since the operands are coming from I/O and peripherals (Morris: column 1, lines 58-63) (Official Notice).

13. As per claim 17:

A calculating machine having an operand stack according to claim 12 (Morris: column 2, lines 48-53).

14. As per claim 18:

A smart card having an integrated virtual calculating machine according to claim 12.

Putting the operand stack on a smart card would at most make it portable, which has been found in In re Lindberg (194 F.2d 732, 735, 93 USPQ 23, 26 (CCPA 1952)) to not be a distinguishing patentable feature.

15. As per claim 19:

Claim 19 is the method claim of claim 12 containing the same limitations. Since it is inherent that the system designed to perform the method would also teach the method, claim 19 is rejected for the same reasons as claim 12.

16. As per claim 20:

Claim 20 is the method claim of claim 13 containing the same limitations. Since it is inherent that the system designed to perform the method would also teach the method, claim 20 is rejected for the same reasons as claim 13.

17. As per claim 21:

Claim 21 is the method claim of claim 14 containing the same limitations. Since it is inherent that the system designed to perform the method would also teach the method, claim 21 is rejected for the same reasons as claim 14.

18. As per claim 22:

Claim 22 is the method claim of claim 16 containing the same limitations. Since it is inherent that the system designed to perform the method would also teach the method, claim 22 is rejected for the same reasons as claim 16.

Conclusion

19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

20. King et al. (US Patent 3,200,379) teaches a stack-based processor.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ryan P. Fiegle whose telephone number is 571-272-5534. The examiner can normally be reached on M-F 12-8.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Chan can be reached on 571-272-4162. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ryan P Fiegle
Examiner
Art Unit 2183

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